

## EDUCATIONAL TOY

### FIELD OF THE INVENTION

The present invention relates generally as indicated to an educational toy and, more particularly, to an educational toy wherein a child moves around during play.

### 5                    BACKGROUND OF THE INVENTION

Children generally enjoy toys and/or activities which allow them to move around during play. For example, children enjoy riding on toy vehicles (*e.g.*, toys that resemble trucks, bikes, cars, trains, etc.) and/or pulling/pushing such vehicles (*i.e.*, wagons, wheelbarrows, shopping carts, etc.). They also enjoy  
10 jumping or stepping among stones, bricks, and/or hopscotch squares. While these activities are often extremely enjoyable for the children, and help them to build gross motor skills, they do not often develop mental skills and/or enhance the child's education.

### SUMMARY OF THE INVENTION

15            The present invention provides a toy with which a child learns while moving around during play. Not only is the toy enjoyable and helps to develop gross motor skills but, significantly, it also develops mental skills and/or enhances the child's education.

More particularly, the present invention provides a toy comprising a  
20 plurality of islands that can be arranged on a surface (*e.g.*, the floor) and a mobile device that can be selectively moved to a location within a predetermined proximity of each of the islands (*e.g.*, contacting the islands or within a certain distance therefrom). An identification tag is associated with each island and contains information that identifies the associated island and distinguishes it  
25 from the other islands. A reader reads the identification tag when the mobile device is placed in the predetermined proximity of the corresponding island. A different output (*e.g.*, audio and/or visual) is generated for each of the plurality of islands.

The plurality of islands preferably remain stationary during play, whereby only the mobile device moves to establish proximity. The islands can comprise pads, matts, and/or cards, and at least some of the islands are unique relative to the other islands so that the child can visually distinguish thereamong. The  
5 pads/matts/cards can have indicia such as road signs, colors, numbers, animals, plants, vehicles, food, well-known characters, people, and/or household items. When the mobile device is within the predetermined proximity of a particular island, the output corresponds to the learning theme and the island's indicia. For example, the toy could announce the corresponding meaning of the island  
10 (e.g., "yield", "red," "three," "octopus," "tree," etc.) and/or instruct the child to proceed to another island. A mode selector can be provided so that a variety of learning themes (e.g., different subjects and/or varying maturity levels) can be introduced to the child.

In one embodiment of the invention, the mobile device comprises a body  
15 and motion-providing members (e.g., wheels) attached to the body. For example, the mobile body can resemble a vehicle (e.g., truck, car, wagon, wheelbarrow, bike, grocery cart, etc.) and have either a ride-on body or a pull/push body. The predetermined proximity is preferably established by the vehicle's body being positioned over an island.

20 In another embodiment of the invention, the mobile device comprises an article of clothing (e.g., shoe, glove, knee-pad, sock, etc.) worn by the child. For example, the mobile device can comprise a pair of sandals strapped to the child's feet so that he can selectively move (e.g., walk, run, hop, skip, jump, etc.) from one island to another. The predetermined proximity is preferably  
25 established upon direct contact of at least one of the sandals with an island.

The island-identification process can be performed by radio frequency identification techniques. Specifically, for example, a reader can broadcast a radio frequency activation signal to be received by one of the tags when the associated island is within a predetermined proximity of the mobile device. The  
30 tag in response transmits identification information to the reader, and the toy uses this information to generate an appropriate output. Alternatively, each tag can comprise a bar code printed on the associated island, and the reader can

read the bar code to obtain identification information pertaining to that particular island.

These and other features of the invention are fully described and particularly pointed out in the claims. The following description and annexed  
5 drawings set forth in detail certain illustrative embodiments of the invention, these embodiments being indicative of but a few of the various ways in which the principles of the invention may be employed.

### DRAWINGS

Figure 1 is a perspective view of a toy having a mobile device according  
10 to one embodiment of the invention.

Figure 2 is a perspective view of the toy having a mobile device according to another embodiment of the invention.

Figure 3 is a schematic diagram of the identifier/output generator of the toy.

15 Figure 4 is a schematic diagram of an alternate identifier/output generator.

### DETAILED DESCRIPTION

Referring now to the drawings, and initially to Figure 1, a toy 10 according to the present invention is shown. The toy 10 comprises a mobile device 12 and  
20 a plurality of islands 14, which the mobile device 12 can be placed in a certain (predetermined) proximity thereof. The mobile device 12 comprises a vehicle-like structure, which is designed to be positioned over the islands 14. To this end, the mobile device 12 comprises a body 16, motion-providing members 18 (e.g., wheels or rollers rotatably attached to the body 16), and a steering  
25 mechanism 20 (e.g., a steering wheel). The mobile device 12 illustrated in Figure 1 resembles a truck; the child can sit on the body 16 (*i.e.*, it is a ride-on) and "drive" the mobile device 12 towards the island 14 of his/her choice. Other vehicle-like structures that could be used for the mobile device 12 could resemble, for example, a car, wagon, wheelbarrow, grocery cart, etc.

Referring now additionally to Figure 2, a mobile device 22 according to another embodiment of the present invention is shown. The mobile device 22 comprises a clothing-like structure that is designed for contact with the islands 14. In the illustrated embodiment, the mobile device 22 comprises a pair of shoes 24 and, more particularly, a pair of sandals. Each shoe 24 includes a sole 26 forming its bottom surface (e.g., the floor-contacting surface) and attachment members 28 (e.g., straps) for attaching the sole 26 to the child's foot. In this manner, the child can "put on" the shoes 24, walk towards a selected island 14, and establish contact with this island 14 by stepping on it. Other clothing-like structures that could be used include, for example, gloves, knee-pads, or socks.

Referring now to both Figure 1 and Figure 2, the islands 14 can comprise pads, mats, cards, or other types of unattached pieces that can be conveniently arranged in a play space and will preferably remain stationary during play with the toy 10. Depending upon the design of the mobile device 12/22, the islands 14 can be positioned on the floor, walls, or other surfaces and objects. (In the illustrated embodiments, the islands 14 are placed on the floor.) With particular reference to the mobile device 12, it can be designed so that the islands 14 can be stored therein when the toy 10 is not in play.

The islands 14 can be placed in a random or arranged manner and can be placed different distances apart depending upon the development of the child and/or the play space available. Accordingly, the toy 10 can "grow" with a child and/or can expand/contract to accommodate different sized play spaces. It may be noted, however, that although the illustrated islands 14 are separated and do not touch each other, connected islands (e.g., connected hopscotch squares) are certainly possible with, and contemplated by, the present invention.

In the embodiment illustrated in Figure 1, the islands 14 comprise different road signs, such as "stop," "go," "yield," "railroad crossing," etc. In the embodiment illustrated in Figure 2, the islands 14 comprise a variety of items such as a boat, a tree, a dog bone, a fish, an octopus, and a bumble bee. The islands 14 can be designed to correspond to these and other learning themes. For example, the islands 14 could be different colors, have different

numbers printed thereon, and/or resemble different kinds of food, plants, animals, vehicles, people, well-known characters, etc. In any event, each island 14 is preferably unique relative to the other islands so that the child can visually distinguish therebetween. Additionally or alternatively, the islands 14 can be  
5 "two-sided," with each having one side with indicia related to one learning theme (e.g., road signs) and the other side with indicia relating to another learning theme (e.g., letters). In this manner, the islands 14 could be "flipped over" to teach a different theme.

The mobile device 12 and the mobile device 22 each comprise a reader  
10 32 and each of the islands 14 comprises an identification tag 34 that, when read by the reader 32, provides identification information particular to that island 14. In the mobile device 12, the reader 32 is housed within the body 16 and positioned adjacent to its bottom surface so as to be within a certain distance of an island 14 when the mobile device 12 is driven thereover. In the mobile  
15 device 22, the reader 32 is housed within the sole 26 of the shoe 24 so as to be adjacent to the identification tag 34 when the child steps on the corresponding island 14. The illustrated identification tags 34 are housed centrally within the islands 14 and, in any event, are housed so that precise positioning of the mobile device 12/22 relative to an island is not necessary.

20 Referring now additionally to Figure 3, the reader 32 comprises an antenna 36 and a decoding transceiver 38. The tags 34 are RFID tags each comprising a receiver 40, an integrated circuit 42 (which stores encoded identification information), and a transmitter 44. (Preferably, the tags 34 are passive devices, that is they do not require their own power supply.) A mode  
25 selector switch 48 also can be provided. A power supply 50, a processor 52, and an output generator 54 (e.g., visual display and/or audio speaker) coordinate to generate a different output for different islands 14.

When the power supply 50 is turned on, the reader's transceiver 38 emits an activation signal, which is broadcast by the antenna 36. Once an  
30 identification tag 34 passes through the electromagnetic field created by the broadcast (e.g., when an island 14 is in a predetermined proximity with the mobile device 12/22), the activation signal is received by the radio frequency

receiver 40. The integrated circuit 42 is thereby powered, and the stored encoded identification information (e.g., a 32 bit word or 128 bit word) is transmitted and received by the reader's transceiver 38. The transceiver 38 decodes the transmitted identification information and sends it to the processor 52, whereat it acts like a "key" to a database of information stored in the memory device of the processor. In this manner, a different output is generated depending upon which island 14 has been identified by the reader 32. Specifically, the processor 52 (*i.e.*, logic device) instructs the output generator 54 to generate a different response depending upon which island 14 has been identified.

When the mobile device 12/22 is within the predetermined proximity of a particular island 14, the reader 32 reads the corresponding identification tag 34 and the toy 10 generates different outputs depending upon which island 14 has been identified by the reader 32. Moreover, the toy 10 can have different modes of operation (see mode selector 48 in Figure 3) to allow outputs corresponding to different learning themes and/or varying maturity levels. In this manner, the toy 10 can accommodate a child at different ages, whereby it could be a "grow-with-me" toy. Additionally, although not shown in the illustrated embodiment, different programs can be provided for the mobile device 12/22.

For an example, when the toy 10 includes the mobile device 12 (Figure 1), the output could comprise the steering wheel 20 lighting up and/or announcing the corresponding meaning of the island 14 as identified by the reader 32. For another example, when the toy 10 includes the mobile device 22 (Figure 2), the output could comprise the sole 26 lighting up and/or announcing the meaning of the island as identified by the reader 32. In another mode of operation, the output would instruct the child to proceed to another particular island 14 and wait for the child to correctly follow this direction. (The instruction can be the same each time the child plays with the toy 10 and/or could be random and different each time the child plays with the toy 10.) In another mode of operation with a different set of islands 14 (and/or when the same set of islands 14 are flipped over for an alternate learning theme), the output could

correspond to numbers, mathematics, alphabet recognition, spelling, common animals or plants, or other articles.

As discussed above, the reader 32 and the tags 34 are designed to establish island-identity through radio frequency patterns. This is the preferred form of the identification, as it requires very little space, is very reliable, and does not require precision positioning. That being said, bar code technology could be used instead, as is shown schematically in Figure 4. Specifically, the reader is a bar code reader 60 and the tags 34 comprise bar codes 62, which are printed on each island 14. Moreover, other types of suitable identification systems could be substituted for the illustrated systems and are within the scope of the present invention.

In addition to generating an output when an island 14 has been identified by the mobile device 12/22, the mobile device 12/22 can generate outputs during between-island play time. For example, the “vehicle” mobile device 12 can make engine sounds, “blinker” sounds, illuminate the dashboard, etc. The “sandal” mobile device 22 could make walking sounds, moon-boot sounds, fun “boing” sounds, etc.

Additionally or alternatively, the islands 14 themselves can provide an output when the mobile device 12/22 is in the predetermined proximity thereto. For example, although not specifically shown in the drawings, the tags 34 could each include an LED. When the tag 34 comes within broadcast range of the reader 32, the power obtained by the incoming signal could be sufficient to power the LED (as well as the integrated circuit 42). The islands 14 need not include any separate source of power (e.g., their own batteries) in order to generate an output.

One may now appreciate that the present invention provides a toy 10 that allows a child to learn while moving around during play, whereby the toy 10 develops mental skills and/or enhances the child's education. Although the invention has been shown and described with respect to certain preferred embodiments, it is evident that equivalent and obvious alterations and modifications will occur to others skilled in the art upon the reading and

understanding of this specification. The present invention includes all such alterations and modifications.